REMARKS/ARGUMENTS

This case has been carefully reviewed and analyzed in view of the outstanding Official Action dated 15 June 2005. Responsive to the objections and rejections made in the Official Action, Claims 1-18 have been amended for further prosecution.

In the Official Action, the Abstract of the Disclosure was objected to because the language of the Abstract does not conform to idiomatic English and United States Patent Practice. Accordingly, the Abstract has been replaced in its entirety with the Substitute Abstract. It is respectfully requested that the amendments to the Abstract be accepted.

Further, in the Official Action, the Drawings were objected to under 37 C.F.R. 1.83(a), as not showing every feature of the invention specified in the Claims. Specifically, the Examiner pointed out that the details of the "variable depth" of the reflecting faces as set forth in Claims 6 and 11 are not shown in the Drawings and must be shown or the feature(s) be canceled from the Claim(s).

It is respectfully submitted that Figs. 2, 3, and 4 of the original Patent Drawings show reflecting faces 3 formed at a predetermined angle in the respective light guiding stripes, which the Applicant considers the equivalent to the phrase "variable depth" of the reflecting faces. However, in order to meet the requirements of the Examiner, Claims 6 and 11 have been amended to remove the phrase "variable depth" of the reflecting faces and to replace it with the Claim language "angled in a predetermined fashion to adjust a luminous flux". The predetermined fashion by which the reflecting face is angled is clearly shown in Figs. 2-4 , where the reflecting faces 3 are shown to be cut in the respective light guide stripes at predetermined angle which phrase is considered to be equivalent to the language "variable depth" of the reflecting face. It is believed that Claims 6 and 11, as amended, clearly correspond to Figs. 2-4 of the Drawings; and the Drawings now show the feature cited in the Claims 6 and 11. Approval of such an Amendment to Claims 6 and 11 is respectfully requested; and the objection to the Drawings under 37 C.F.R. § 1.83(a) is respectfully requested to be lifted.

Further in the Official Action, the Drawings were objected to as failing to comply with 37 C.F.R. 1.84(p)(4) because, as presented by the Examiner, the reference characters 1 and 10 in Figs. 1-4 have both been used to designate "fork lighting member". It is respectfully submitted that both in the Specification and in the Drawings, the reference character 1 is used only to designate the light guiding frame, while the reference character 10 is used only to designate forked lighting member. No confusing or erroneous designation for the reference characters 1 and 10 have been found through examination of the original Application as well as original Drawings. It is therefore respectfully requested, that the objection to the Drawings as failing to comply with 37 C.F.R. 1.84(p)(4) to be lifted.

In the Official Action, the Examiner requested that the Specification including the Claims to be revised to confirm to idiomatic English and United States Patent Practice. Accordingly, a Substitute Specification replacing the original Patent Application in its entirety has been submitted herewith along with the current paper. A clean copy of the Substitute Specification corresponding to the marked up copy has been submitted therewith in the Appendix to the current paper. No new matter has been added by the Substitute Specification, and the clean copy thereof is in complete compliance with the marked-up copy presented in Pages 35-43 of this Paper.

In the Official Action, Claim 1 was objected to because of an informality found therein; Claims 4, 9, and 14 were rejected under 35 U.S.C. § 112, first paragraph; Claims 1 and 3 were rejected under 35 U.S.C. § 102(b) as being anticipated by Simon, U.S. Patent #6,270,243; Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Simon; Claims 4, 5, and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Simon in view of Salmon, et al., U.S. Patent #5,938,324; Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Simon and Salmon, et al., and further in view of Lee, U.S. Patent #5,988,827; Claims 8-12, 14 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Simon, Salmon, et al., and Lee, and further in view of Poli, et al., U.S. Patent #5,984,485; Claims 13 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Simon, Salmon, et al., Lee, and Poli, et al., and further in view of Simms, U.S. Patent #5,590,945; and Claims 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Simon and further in view of Freier, et al., U.S. Patent #6,123,442.

Accordingly, the Independent Claim 1 has been amended to more clearly emphasize the distinguishing features of the present invention over the prior art cited by the Examiner, taken singly or in combination thereof, as well as to improve the language thereof. Claim 3 has been canceled without prejudice to incorporate the subject matter thereof into the Claim 1, and Claims 2 and 4-18 have been amended to improve the Claim language thereof as well as to overcome the objection and rejections cited in the outstanding Official Action.

Prior to consideration of the distinguishing features of the present invention, covered by the amended Independent Claim 1 and Dependent Claims of the current Patent Application, it is believed that it may be beneficial to briefly review the inventive structure, as now claimed.

The present invention is directed to a light guiding frame with a plurality of light guiding tracks which includes one or two forked lighting members including a containing portion receiving a lighting member such as an LED, and a plurality of tracks 102 extending from the containing portion. The light guiding frame further includes a light guide member 12 built of a plurality of light guide stripes connected in a predetermined fashion to define a predetermined shape of the light guide member. Each of the light guide stripes is connected to a respective one of the plurality of tracks of the forked lighting member to receive light flux therefrom which is transmitted through the tracks from the lighting member (LED). A reflection member encloses the forked lighting member(s) and extends to predetermined areas of the light guide stripes (the bottom and side surfaces thereof) of the light guide member to define a light emitting displaying area of the light guiding frame which extends continuously along the entire length of the plurality of the light guide stripes and which is contoured in correspondence to the predetermined shape of the light guide member.

As shown in Figs. 2-4, a plurality of reflecting faces 3 are formed at predetermined areas of the light guide stripes to reflect the beam of light falling onto the reflecting faces and to transmit the light beam in a predetermined direction along the light guide stripes. As shown, the reflecting faces 3 are angled (cut into the light guide stripes at a predetermined angle) meaning that along the surface of the reflecting faces they are cut in the light guide stripes a variable depth for adjusting luminous flux flowing along the light guide stripes. This way, by means of employing the reflecting faces 3 angled in a predetermined fashion, the luminous flux can be adjusted as needed.

The light guiding frame, specifically the light guide member thereof, is formed by stripes which present a flat structure.

Referring now to the references cited by the Examiner, Simon is directed to a multiple beam projection lighting system which shows a collection/projection unit 102 to which a plurality of light conveying rods 100 are connected in order to convey light to the ends thereof where reflecting surfaces 104 are positioned. As presented in Column 5, Lines 8-12, the collection/projection unit 102 is uniquely designed to be capable of projecting light into a concentric ring so as to be accepted within a series of solid conveying rods 100 as illustrated in Figs. 12-15.

The conveying rods 100 are polished for total internal reflection in order to provide the entire luminous flux to the ends of the rods 100 to be supplied to the reflectors 104.

Simon further shows in Fig. 2 thereof that the reflecting surface covers the entire surface of the conveying rod 10 but leaves the uncovered window 20 therein for the light to be emitted outward therethrough.

It is respectfully submitted that Simon fails to suggest, disclose, or render obvious the structure which the Applicant refers to as the invention and which is clearly emphasized in the Independent Claim 1, as now amended. Specifically,

(A) In Simon, the light conveying means attached to and extending from the collection/projection unit 102 are rods 100 which are circular in cross-section and which when assembled, presents a three-dimensional structure which consumes a sufficient volume of a device it is to be used in.

Opposedly to Simon, in the present invention, the light guide member 12 is built of stripes which form a flat structure with almost unnoticeable height and which is perfectly suitable for usage in miniature electronic devices.

(B) Further, as shown in Figs. 12-15, and presented in Column 5, Lines 6-8 of Simon, the reflection surface covers either completely the light conveying rod 100 for obtaining the end emission or leaves a small window 20 at a predetermined area of the light conveying rod 10 as shown in Fig. 2. Either, when the light is emitted through the window 20 of Simon, or when the end emission is attained as shown in Figs. 12-15 of Simon, this arrangement fails to provide a light displaying area extending continuously along the entire length of the light conveying members which would be contoured in correspondence with the shape of the conveying members 10 and 100 of Simon.

While in the present invention, a reflection member extends along the light guide stripes of the light guide member in the fashion to define a light emitting displaying area 5 of the light guiding frame which extends continuously along substantially the entire length of the plurality of the light guide stripes of the light guide member and which is contoured in correspondence to the predetermined shape of the light guide member. This feature is completely missing from the Simon reference.

(C) Simon, in contrast to the present invention, fails to teach that the light conveying rods 100 can be arranged in a U-shaped or rectangularly shaped structure. As a matter of fact, since Simon uses the end emission or the emission through a single small window, Simon is not intended and is not suited to create a displaying area of a predetermined shape which would correspond to the predetermined contour of the light conveying rods.

While in the present invention, one of the essential novel features of the invention is the light emitting displaying area which is contoured as needed by arranging the light guide stripes in different fashions each with respect to the other to attain a needed shape of the displaying area. Therefore, by positioning the light guide stripes in the light guide member 12 in a predetermined manner, it is possible to change the shape of the displaying area either to form parallel lines, U-shaped structure, or to be rectangularly-shaped, circularly-shaped, etc.

The Simon reference therefore fails to suggest or disclose the structure which includes a light guide member including a plurality of light guide stripes connected in a predetermined fashion each to the other to define a predetermined shape of the light guide member, and

a reflection member extending to a predetermined area of the plurality of the light guide stripes of the light guide member to define a light emitting displaying area of the light guiding frame extending continuously along the entire length of the plurality of the light guide stripes and contoured in correspondence to the predetermined shape of the light guide member.

As the reference fails to suggest or disclose each and every feature of the invention, as now claimed in Claim 1, it cannot anticipate this Claim. Therefore, the allowance of Claim 1 in view of the Simon reference is believed; and the same is respectfully urged. Additionally, as the reference fails to suggest all of the features of the invention in combination, it cannot be rendered obvious by the Simon Patent.

Salmon, another reference cited by the Examiner, is directed to a light pipe for transmitting LED emitted light from a printed circuit board through an opening in a panel. The light pipe 20 of Salmon, et al., includes light transmitting member 22 which has a first end 24, a second end 26, and an outer surface 28. Light from the LED enters the second end 26, is internally reflected along the light transmitting member 22, and exits from the first end 24. Light pipe 20 has a fastening means for fastening light transmitting member to a display panel. The outer surface 28 is provided with grooves 30 and 32 as fastening means.

Shown in Fig. 3 is a structure composed of two light pipes which have light transmitting members 22 and 68. Grooves 76 and 77 as well as grooves 30 and 32 are used as fastening means to fasten the pipe to a display panel. A connecting portion 90, shown in Fig. 3, extends between the light transmitting member 22 and light transmitting member 68 and provides structural support and prevents perceptible crosstalk and mixing or bleeding of light between light transmitting members 22 and 68.

It is respectfully submitted that Salmon, et al. reference fails to suggest, disclose or render obvious the structure which the Applicant regards as the invention. Specifically,

(A) Salmon presents a plurality of parallel light transmitting members with the end emission of the light (Column 2, Lines 40-42). The light is completely internally reflected within the light transmitting structure 22 and 68 and does not emit from other surfaces of the light transmitting structure except from the end 24 and 70 thereof.

While in the present invention, the reflection member 11 extends in such a fashion along the light guide stripes of the guide light member 12 that the top surface of the stripes extending continuously along the entire length thereof defines a light emitting display area. This feature is completely missing from Salmon, et al.

(B) Further, Salmon, et al., in contradistinction to the present invention, fails to suggest a forked lighting member which would include a plurality of tracks and which would transmit light from a single LED in many passages corresponding to the tracks to be entered into the light guide stripes of the light guide member. As presented in Fig. 3 of Salmon, et al., instead of the forked lighting member, there are a plurality of bands 26, 84, etc., each of which has its own LED 82, etc. The light from an LED is not diverged in multiplicity of light passages.

While in the present invention, the forked lighting member includes a plurality of tracks which diverge the light emitted from the LED 2 into a plurality of light passages.

(C) Additionally, although the Examiner mentioned that Fig. 3 of Salmon, et al. presents a U-shaped light guide structure, it is respectfully submitted that the structure formed by the member 44, member 86, and member 90 is not actually a U-shaped light guide structure, since the beam 90 is not a light guiding structure and is used merely for structural support. Even more, the portion 90 prevents crosstalk and mixing or light between the light transmitting member 22 and 68. It is quite clear for those skilled in the art that the structure 90 is an isolating structure but not a light guiding member. It is clear now that the structure of Salmon, et al. considered by the Examiner as the U-shaped light guide member is actually a two parallel light transmitting channels optically separated one from another by the member 90.

While in the present invention, the U-shaped light guide member 12 as best shown in Fig. 2, includes two parallel first light guide stripes 21 and a second light guide stripe 22 extending therebetween which also is light transmitting structure. The light freely flows within the U-shaped light guiding structure, while in Salmon, et al., light flows along parallel passages optically isolated one from another.

(D) Further, the grooves 30 and 32, shown in Fig. 1, as well as grooves 76 and 77 shown in Fig. 3, are not reflecting surfaces as in the present invention, but quite to the contrary, are merely used as fastening structures and are not optically active.

While in the present invention, the reflecting faces 3 best shown in Figs. 2-4 are reflecting structures optically active and shaped in predetermined fashion in order to adjust the reflection of the light beam within the light guide stripes in order to send the light along predetermined passages.

Lee, still another reference cited by the Examiner, is directed to a backlight unit for display device which includes a mold frame and light guide panel wherein the mold frame includes a groove having at least one rounded corner.

It is respectfully submitted that the Lee reference was cited by the Examiner merely to show that the rounded corner can be used in order to avoid unwanted concentration of light at predetermined areas. The structure presented in Lee however fails to suggest or disclose the rounded corners positioned at predetermined locations of a structure which has a forked lighting member, a light guide member which includes a plurality of light guide stripes connected each to the other in a predetermined fashion to provide a contoured light guide member and wherein the reflection member extends to predetermined areas of the light guide stripes to define a light emitting displaying area which extends continuously along the entire length of the plurality of light guide stripes and contoured in correspondence with a predetermined shape of the light guide member.

Poli, et al., another reference cited by the Examiner, is directed to a uniform illumination device for the dial of a display device which shows in Fig. 7A light guide 40 configured to follow the whole contour of a rectangular dial. The guide 40 includes a single light source 43 situated in the middle of a small side. Each angle of the external surface oriented towards the fitting ring is treated to have a mirror portion 42 allowing the light rays to be rectified. The variation in the diffusion power is obtained by application of a diffusing layer 46.

(A) It is respectfully submitted that in Poli, et al., opposedly to the present invention, the light source 43 is situated and incorporated in the light guide 40 itself and the side of the rectangularly shaped guide 40 is interrupted at the place where the LED is positioned. The light flux therefore flows along the rectangularly shaped member 40 in non-continuous fashion.

While in the present invention, the rectangularly shaped light guide member extends continuously and the light follow continuously along the entire length of the plurality of light guide stripes.

(B) Further, Poli, et al.'s structure fails to use a forked lighting member which would include an LED and which has a plurality of tracks through which the light from the LED would be transmitted to the rectangularly shaped member 40.

While in the present invention, a forked lighting member 10 is formed with a plurality of tracks which serve as a transmitter of the light of the LED 2 to the continually contoured guide light member 12. In the present invention, due to the forked lighting member with a plurality of tracks for transmitting light from the lighting source to the guide light member, the guide light member 12 is not burdened with the light emitting source. The arrangement of the present invention having a forked lighting member and the guide light member, and wherein the LED is positioned in the forked light member, allows in contrast to Poli, et al., to attain a truly uniform luminous flux along the guide light member in the uninterrupted fashion, and therefore, reaches an effective and high quality illumination by the light emitted through the displaying area 5 which continuously extends the entire length of the plurality of light guide strips of the guide light member.

Simms, the reference directed to the illuminated line of light using point light source is believed to merely be cited as showing the narrowing area formed in the light transmitting stripe 10. The structure however fails to be presented as a part of the arrangement which would have a forked lighting member with a plurality of tracks and a guide light member which would include a plurality of light guide stripes arranged in a predetermined fashion to form a specifically shaped guide light member which includes a light emitting displaying area extending continuously along the entire length of the plurality of light guide strips and contoured to correspond to the predetermined shape of the light guide member.

Freier, et al., still another reference cited by the Examiner, is directed to articles with diffused reflection of light from light fibers. This reference presents a light transmitting fiber 120 and reflecting structure 230 which is disposed along predetermined areas of the fiber 120 to emit the diffused light in a predetermined set of directions from the light fiber.

It is respectfully submitted that the light fiber 120 is a fiber but not a stripe, as in the present invention. Further, Freier, et al. Patent fails to disclose, suggest, or render obvious the reflecting structure 280 of the fiber 120 as a part of the light guiding frame which includes a forked lighting member with a plurality of tracks, a light guide member which includes a plurality of light guide stripes connected each to the other in a predetermined fashion to define a shape of the guide light member, or that the display area of the guide light member extends continuously along substantially the entire length of the plurality of the light guide stripes and is contoured in correspondence to the predetermined shape of the light guide member.

None of the references cited by the Examiner, taken singly or in any combination thereof, are directed to a light guiding frame which includes forked lighting member(s) including a lighting member and a plurality of tracks,

a light guide member including a plurality of light guide stripes connected in a predetermined fashion each to the other to define a predetermined shape of the light guide member, wherein each of the plurality of the light guide stripes is coupled to a respective one of the plurality of the tracks of the forked lighting member to receive light transmitted therethrough from the lighting member, and

a reflection member extending to predetermined areas of the plurality of light guide stripes of the light guide member to define a light emitting displaying area of the light guiding frame extending continuously along substantially the entire length of the plurality of the light guide stripes and contoured in correspondence to the predetermined shape of the light guide member.

As the amended Claim 1 clearly directs itself to the concept and structure having the distinguishing features of the present invention, it is believed to be patentably distinct over the cited prior art taken singly or in combination. Accordingly, Claim 1 as amended is believed to be allowable; and the same is respectfully urged.

Claims 2 and 4-18, dependent upon Claim 1, are believed to add further limitations that are patentably distinct in addition to being dependent upon what is now believed to be a patentable base Claim, and therefore, allowable for at least the same reasons.

For all of the foregoing reasons, it is now believed that the subject Patent Application has been placed in condition for allowance, and such action is respectfully requested.

Respectfully submitted,

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